# Human Exploration and Development of Space
## FY 2003 Performance Plan

## Mission

As America enters a new millennium, people the world over are reflecting on the accomplishments of the past and speculating about opportunities of the future. Some of the most inspiring and important accomplishments of the past four decades have resulted from the space program. Events such as the planet-wide impact of the Apollo landings on the moon and images of the Earth; discoveries such as the astonishing Hubble Space Telescope (HST) photos of solar system formation; achievements such as the sending of the first human-built spacecraft—Pioneer and Voyager spacecraft—beyond our solar system; and new capabilities such as communications and weather satellites. Space has touched the lives of many hundreds of millions worldwide.

The mission of HEDS is to expand the frontiers of space and knowledge by exploring, using, and enabling the development of space for human enterprise. To achieve this mission, NASA's Human Exploration and Development of Space (HEDS) Enterprise is pursuing four strategic goals:

- Explore the space frontier
- Enable humans to live and work permanently in space
- Enable the commercial development of space, and
- Share the experience and benefits of discovery

HEDS begins with the foundation of the Space Shuttle and the International Space Station, now under construction in Earth orbit, and look to the future by fostering technology development and commercialization in space.

HEDS also aspires to make possible U.S. leadership of international efforts to extend permanently human presence beyond the bounds of Earth, involving both machines and humans as partners in innovative approaches to exploration. HEDS engages the private sector in the commercial development of space in order to enable the continuation of current space business and the creation of new wealth and new jobs for the U.S. economy.

Accomplishment of these goals will enable historic improvements in our understanding of nature, in human accomplishment, and in the quality of life. The Human Exploration and Development of Space Strategic Plan is a first step. This performance plan shows how we plan to measure our success.

## Resource Requirements:

(NOA, dollars in millions)

| | FY1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 |
|---|---|---|---|---|---|
| $M | 6,345 | 6,302 | 5,973 | 6,830 | 6,131 |
| CS FTE | 7,209 | 7,416 | 7,936 | 7,182 | 6,877 |

## Implementation Strategy

**Goal 1 - Explore the Space Frontier**

There are certain ideas that many believe to be inherent in the human psyche and integral to American culture: ambition for progress, curiosity about the unknown, the need to pose profound questions and to answer them, the concept of new frontiers that—once achieved—promise a better quality of life for all peoples. Space is such a frontier. Earth orbit, the Moon, near-Earth space, Mars and the asteroids, eventually the moons of the giant planets of the outer solar system, and someday more distant worlds—these are collectively the endless, ever-expanding frontier of the night sky under which the human species evolved and toward which the human spirit is inevitably drawn. It is a fundamental goal of NASA to expand the space frontier progressively through human exploration, utilization of space for research, and commercial development.

Strategic Objectives

- Invest in the development of high-leverage technologies to enable safe, effective and affordable human/robotic exploration.
- Conduct engineering research on the International Space Station to enable exploration beyond Earth orbit.
- Enable human exploration through collaborative robotic missions.
- Define innovative human exploration mission approaches.
- Develop exploration/commercial capabilities through private sector and international partnerships.

**Goal 2 - Enable Humans to Live and Work Permanently in Space**

Advances in technology notwithstanding, the human element continues to be the major factor in the success or failure of most terrestrial enterprises. In many cases, innovative technologies are most effective when used to leverage or enhance the productivity of humans. Moreover, the human element is a quintessential component in the public's continuing interest in, and support for the space program. Human presence will be an essential factor in successfully opening the space frontier and expanding knowledge through research in space. As our activities in space grow, so too must human involvement. In this way, we open the door to an array of benefits, tangible and intangible, for the people of the United States and the world. It is, therefore, a goal of NASA to enable and establish permanent and productive human presence in space, to advance America's aspirations and opportunities in space through new technologies and new ways of doing business.

Strategic Objectives

- Provide and make use of safe, affordable, and improved access to space.
- Operate the International Space Station to advance science, exploration, engineering, and commerce.
- Ensure the health, safety, and performance of humans living and working in space.
- Meet sustained space operations needs while reducing costs.

**Goal 3 - Enable the Commercial Development of Space**

Commerce is essential to human society; free market transactions are the foundation of the dramatic progress humankind has made during the past several centuries. Wherever humans go and wherever they live, there too is commerce. Moreover, the free market is an effective mechanism for delivering tangible benefits from space broadly to the American people.

If humanity is to explore and develop space, to better exploit the space environment for profound scientific discoveries, and someday to settle the space frontier, it may be through the continuing expansion of the private sector—of individuals and of industry—into space. As the space frontier opens, it is important must therefore seek to expand the free market into space.

It is a goal of NASA to enable the commercial development of space.

Strategic Objectives

- Improve the accessibility of space to meet the needs of commercial research and development.
- Foster commercial endeavors with the International Space Station and other assets.
- Develop new capabilities for human space flight and commercial applications through partnerships with the private sector.

**Goal 4 - Share the Experience and Benefits of Discovery**

Americans—of all backgrounds—should have the opportunity to share in the experience and benefits of space exploration and development. During the past four decades, ambitious human space flight missions have inspired generations of young people to undertake careers in science, mathematics, and engineering— benefiting both themselves and society. The space program can enrich society by directly enhancing the quality of education. Terrestrial applications of technologies developed for space have saved many lives, made possible medical breakthroughs, created countless jobs, and yielded diverse other tangible benefits for Americans. The further commercial development of space will yield still more jobs, technologies, and capabilities to benefit people the world over in their everyday lives. A goal of NASA is therefore to share the experience, the excitement of discovery, and the benefits of human space flight with all.

Strategic Objectives

- Engage and involve the public in the excitement and the benefits of—and in setting the goals for—the exploration and development of space.
- Provide significantly more value to significantly more people through exploration and space development efforts.
- Advance the scientific, technological, and academic achievement of the Nation by sharing our knowledge, capabilities, and assets.

# Performance Measures

## Goal 1: Explore the Space Frontier

**Objective: Invest in the development of high-leverage technologies to enable safe, effective and affordable human/robotic exploration.**

Annual Performance Goal 3H01: The HEDS Advanced Programs office works collaboratively with other NASA Enterprises and Field Centers on advanced planning activities to leverage available resources in advanced technologies that will enable safe, effective, and affordable human/robotic exploration.

- NASA Exploration Team (NEXT) will produce and distribute an annual report documenting advanced planning activities and advanced technology advancement.

**Objective: Conduct engineering research on the International Space Station to enable exploration beyond Earth orbit.**

Annual Performance Goal 3H02: Provide for science and technology research on the International Space Station a minimum average of five mid-deck lockers for each Space Shuttle mission to the ISS and maintain 80% availability of Space Station resources to support science and technology research.

- Demonstrate that an average of five mid-deck lockers was used to support research for each Space Shuttle mission going to the International Space Station (source International Space Station manifest).
- Formulate a customer survey that measures customer satisfaction of available Space Station resources to ISS researchers.
- Determine if adequate resources were available to the science and technology researchers conducting experiments on the International Space Station -- Conduct a customer survey of International Space Station researchers at the conclusion of their research on Space Station (80% customer satisfaction on available resources = green).

Annual Performance Goal 3H25: Space Shuttle supports exploration by transporting payloads, logistics, and crew to the International Space Station.

- Achieve 100% on-orbit mission success for all flights in FY 2003. For this metric, mission success criteria are those provided to the prime contractor (SFOC) for purposes of determining successful accomplishment of the performance incentive fees in the contract

Public Benefit: Many of the key technologies needed for future human/robotic exploration and development of space will require testing and later demonstrations in the actual space environment before they can be cost-effectively applied in future space systems. Conducting engineering research and development at the International Space Station, will result in more timely, affordable and successful application of these new technologies (including the capability to design to cost and implement to cost for future HEDS projects). In addition, the space application of these technologies will result in expanded scope for human commerce and an improved quality of life by enabling potential high-value new space industries (e.g., advanced communications satellites, manufacturing in space, R&D in space, public space travel, space utilities, and others) while improving the quality of

life (e.g., through advances in our understanding of human physiology and human factors, in medicine and medical systems). Promote continuous research and development activities through the International Space Station assembly period.

**Objective: Enable human exploration through collaborative robotic missions.**

Annual Performance Goal 3H03: Provide reliable launch services for approved missions.

- NASA success rate at or above a running average of 95% for missions noted on the Flight Planning Board manifest and launched pursuant to commercial launch service contracts.

Annual Performance Goal 3H04: Provide reliable space communication services for Space Science and Earth Science missions be consistent with program and project requirements.

- Achieve at least 95 percent of planned data delivery for space flight missions.

Public Benefit: A better understanding (at the earliest possible dates) of the space and planetary environments to which human explorers will one day travel will make possible a more focused, more effective and lower cost investment to develop the technologies needed for future human/robotic exploration and development of space. This knowledge and understanding will also make possible reduced risks to the health and safety of future astronauts. Overall, pursuing collaborative robotic missions will result in future human/robotic exploration missions with lower costs and greater benefits that would be otherwise achievable. HEDS supports this strategic objective by working collaboratively with other enterprises on advanced planning activities and providing launch services supporting NASA sponsored missions including robotic spacecraft missions.

## Goal 2: Enable Humans to Live and Work Permanently in Space

**Objective: Provide and make use of safe, affordable, and improved access to space.**

Annual Performance Goal 3H05: Assure public, flight crew, and workforce safety for all Space Shuttle operations, measured by the following:

- Achieve zero type A (damage to property at least $1M or death) or B (damage to property at least $250K or disability/hospitalization) mishaps in FY 2003.
- Achieve an average of 8 or fewer flight anomalies per Space Shuttle mission.

Public Benefit: Successfully meeting goal 3H05 allows researchers to apply the knowledge gained from flying payloads on the Space Shuttle thus assuring a positive return on the public's investment in space transportation

Annual Performance Goal 3H06: Safely meet the FY 2003 manifest and flight rate commitment. Annual performance goal is measured for Space Shuttle performance only.

- Achieve 100% on-orbit mission success for all flights in FY 2003. For this metric, mission success criteria are those provided to the prime contractor (SFOC) for purposes of determining successful accomplishment of the performance incentive fees in the contract.

Public Benefit: Successfully meeting goal 3H06 allows researchers to apply the knowledge gained from flying payloads on the Space Shuttle thus assuring a positive return on the public's investment in space transportation

Annual Performance Goal 3H07: Maintain a "12-month" manifest preparation time.

- Baselined Flight Requirements Document (FRD) tracks achievement of this goal and it defines the primary cargo manifest that uses the "12 month" template. Achievement of performance goal is independent of delays caused by non-manifest related issues, for example payload readiness to launch.

Public Benefit: Ensuring the most effective and efficient access to space for primary payload customers while supporting the safety and reliability of the Shuttle transportation system.

Annual Performance Goal 3H08: Have in place a Shuttle safety investment program that ensures the availability of a safe and reliable Shuttle system for International Space Station assembly and operations.

- Meet the major FY 2003 Space Shuttle Safety Upgrade milestones. For this metric, major milestones are defined to be the Preliminary Design Review dates, Critical Design Review dates, Ready dates for upgrade installation/integration with flight hardware/software, and Ready dates for first flight.

Annual Performance Goal 3H09: HEDS will collaborate with NASA's Office of Human Resources and Education, and Second Generation Program Office to establish and implement an agency wide training program for employees that support the Space Launch Initiative needs. The training program will communicate and document "lessons learned" from other major technology development and operational programs. "Lessons learned" would be based on but not limited to both government and contractor experience on the Space Shuttle program, Saturn program, and other commercial launch vehicle programs. HEDS shall with the Second Generation Program Office and NASA's Office of Human Resources and Education:

- Establish and implement a curriculum in program and project management that communicates management practices, tools, and "lessons learned".
- Establish and implement a curriculum in systems engineering and management that communicates system engineering practices, tools, and "lessons learned".

Annual Performance Goal 3H10: HEDS Enterprise will work with the Second Generation Program to define available opportunities to utilize Office of Space Flight assets to test 2nd Generation Reusable Launch Vehicle enabling technologies. HEDS shall:

- Develop comprehensive list of test environments and associated test specimen size that can be accommodated.
- Define available window(s) of opportunity.
- Participate in Second Generation Program technical interchange meetings.
- Attend quarterly SLI and Space Transportation reviews.

Public Benefit: Ensuring a safe and reliable space transportation system that maximizes long-term benefits to the public through support to the International Space Station program and other primary payload customers.

**Objective: Operate the International Space Station to advance science, exploration, engineering, and commerce.**

Annual Performance Goal 3H11: Demonstrate International Space Station on-orbit vehicle operational safety, reliability, and performance.

- Zero safety incidents (i.e. no on-orbit injuries)
- Actual resources available to the payloads measured against the planned payload allocation for power, crew time, and telemetry. (Green = 80% or greater)

Public Benefit: Meeting operations targets and beginning research activities will provide many benefits of space research directly to the public through new discoveries and improved technology applications in areas such as medicine, industrial processes and fundamental knowledge.

Annual Performance Goal 3H12: Demonstrate and document the International Space Station program progress and readiness at a level sufficient to show adequate support of the assembly schedule.

- Conduct monthly status reviews to show maturity and preparation of flight readiness products. Maintaining 80% of defined activities are within scheduled targets.

Public Benefit: Meeting development targets and beginning research activities will provide many benefits of space research directly to the public through new discoveries and improved technology applications in such areas as medicine, industrial processes and fundamental knowledge.

Annual Performance Goal 3H13: Successfully complete 90% of International Space Station planned mission objectives.

- Achieve 90% on-orbit mission success for planned International Space Station assembly and logistics activities on the Space Shuttle flights scheduled for FY 2003. Sum total of the successfully accomplished primary mission objectives divided by the total number of mission objectives per year.

Public Benefit: Improving life on Earth. Successfully implementing goal 3H12 brings the many benefits of space research directly to the public through new discoveries and improved technology applications in areas such as medicine, industrial processes and fundamental knowledge.

**Objective: Meet sustained space operations needs while reducing costs.**

Annual Performance Goal 3H14: Space Communications performance metrics for each Space Shuttle and International Space Station mission/expedition will be consistent with detailed program and project operations requirements in project Service Level Agreements.

- Achieve at least 95 percent of planned data delivery for each Space Shuttle mission and International Space Station expedition

Public Benefit: The public's investment in space operations demands NASA's attention to safety first and cost reduction whenever possible. We are accountable for maximizing the return on the public's investment.

Annual Performance Goal 3H15: Develop and execute a management plan and open future Station hardware and service procurements to innovation and cost-saving ideas.

- Implement management plan – The International Space Station Integrated Program Management Plan (IPMP) addresses the cost and management challenges/risks in OMB, GAO and OIG reports. It contains reforms that strengthen headquarters involvement, increases communications, provide more accurate assessment and maintains budget accountability. Instituted processes will define the International Space Station baseline, develop a WBS and associated schedule and cost milestones for core complete, provide funding rationale and justification for the operations budget, simplify contract relationships, improve the MIS, provide rigorous and independent cost estimates, provide more accurate assessments of Program trends and issues to develop an early warning system of major program risks and cost growth, and assure budget and earned value plans are met. Assessment reports will include documentation of the discovery and resolution of major issues. The Integrated Program Management Plan (IPMP) is a more comprehensive management document that incorporates the Program Management Action Plan (PMAP).

Public Benefit: To ensure effective management of the International Space Station program.

## Goal 3: Enable the Commercial Development of Space

**Objective: Improve the accessibility of space to meet the needs of commercial research and development.**

Annual Performance Goal 3H16: The Space Communications program will conduct tasks that enable commercialization and will minimize investment in government infrastructure for which commercial alternatives are being developed.

- Increase the percentage of the space operations budget allocated to the acquisition of communications and data services from the commercial sector from 15% in FY 2001 and 20% in FY 2002 to 25% in FY 2003.

Public Benefit: The public's investment in space operations demands NASA's attention to safety first and cost reduction whenever possible. We are accountable for maximizing the return on the public's investment.

Annual Performance Goal 3H17: Establish mechanisms to enable NASA access to the use of U.S. commercially developed launch systems.

- Assure that NASA launch service contracts include annual on-ramps for newly developed commercial launch services as they meet NASA's risk mitigation policy.

Public Benefit: New commercially developed launch services will be able to compete for NASA launches when they meet NASA's risk mitigation policy.

**Objective: Foster commercial endeavors with the International Space Station and other assets.**

Annual Performance Goal 3H18: Establish mechanisms to enable NASA to utilize commercial payload processing facilities.

- Fifty percent or greater of the Space Shuttle (excluding International Space Station) and ELV (excluding planetary) payloads will be processed utilizing commercial facilities.

Annual Performance Goal 3H19: Increase collaboration in space commerce with a variety of industry, academia and non-profit organizations.

- Materially participate in the development and issuance of a NASA-wide enhanced space commerce strategy document; and produce formal documents that demonstrate serious potential collaboration with at least three private sector companies

**Objective: Develop new capabilities for human space flight and commercial applications through partnerships with the private sector.**

Annual Performance Goal 3H20: NASA will aggressively pursue Space Shuttle competitive sourcing opportunities that improve the Shuttle's safety and operational efficiency.

- Obtain Administration approval of Space Shuttle competitive sourcing plan and implementation approach.
- Complete cost benefit analyses of competitive sourcing opportunities by an independent third party.
- Pursue contract mechanisms for shuttle competitive sourcing which assures maintenance of shuttle system safety,

Public Benefit: Partnership with commercial interests brings the results and benefits of living and working in space to the public more quickly than the government could do by itself.

## Goal 4: Share the Experience and Benefits of Discovery

**Objective: Engage and involve the public in the excitement and the benefits of and in setting the goals for the exploration and development of space.**

Annual Performance Goal 3H21: Conduct HEDS related Education and Outreach Programs to improve the engagement/involvement of the formal education, informal education, and the general public communities.

- Revise and implement action plans for the Education and Outreach Programs.
- Continuously evaluate HEDS Education and Outreach Programs and events to provide information about their effectiveness in meeting identified goals.

Public Benefit: Continuing to improve the involvement of formal education, informal education, and the general public communities in setting the HEDS goals and activities will assure that future exploration and development of space programs are well aligned with the interests and the intentions of the primary constituents for NASA exploration programs and projects that are more cost-effective in achieving educational and public goals and objectives.

**Objective: Provide significantly more value to significantly more people through exploration and space development efforts.**

Annual Performance Goal 3H22: Expand public access to HEDS missions information (especially International Space Station) by working with industry, academia, and the media to create media projects and public engagement initiatives that allow "first-hand" public participation using telepresence for current missions, and virtual reality or mock-ups for future missions beyond Earth orbit.

- Museums – track the number of science museums and other informal education forums incorporating first person participation with the International Space Station.
- Develop a seamless education/outreach website presence providing public and educational access and availability to HEDS education/outreach programs, products, and public affairs information.
- Publish a HEDS Commercial Outreach Initiative Notice of Opportunity designed to enhance public knowledge about human exploration of space.

Public Benefit: Continuing to improve public involvement in the conduct of and results from future HEDS activities will assure that future exploration and development of space programs are well understood by the primary constituents for NASA exploration programs. In addition, more effective communication of the knowledge and technologies resulting from HEDS activities will promote a rapid transition of these innovations into private sector applications, with resulting benefits to the economy and quality of life.

**Objective: Advance the scientific, technological, and academic achievement of the Nation by sharing our knowledge, capabilities, and assets.**

Annual Performance Goal 3H23: Initiate the development and implementation of a formal and systematic mechanism to integrate HEDS latest research knowledge into the K-12/University classroom environment.

- Ensure the number of HEDS research projects, which are currently flying or scheduled to fly on the Space Shuttle and International Space Station, will be transferred to and made accessible to the education community.
- Enhance the formal and informal education programs through research, products, services, and distance learning technologies.
- Collaborate with other NASA education organizations and the external education community to ensure that HEDS-related educational materials and products are developed and made available to K-12 educators.

Annual Performance Goal 3H24: Engage and collaborate with research universities (1) for joint generation of new knowledge in HEDS related areas, (2) for the advancement of the HEDS mission and development of cutting edge technical capabilities, and (3) for ensuring a high quality future workforce.

- Track the number of collaborative partnerships with research universities
- Develop, utilize, and disseminate science, mathematics, and technology instructional materials based on HEDS unique missions and results, and to support the development of higher education curricula.

- Increase the number of opportunities for teachers and students to enhance their knowledge of HEDS and science, mathematics, technology, engineering and to enhance their skills through mechanisms such as internships, professional development workshops, and research opportunities.

Public Benefit: HEDS is an important investment in the future of the US. By presenting and disseminating informational and educational materials on HEDS, including new discoveries, in a form that is accurate and current, understandable to both educators and students, and tied to local, state, and national curriculum frameworks, HEDS can contribute to advancing the academic achievements of the Nation. Similarly, by effectively advancing scientific and technological achievements, new discoveries and new industries will result, contributing to a stronger economy in the future.

## Management Challenges and High Risk Areas

NASA is responding to feedback from it stake holders regarding management challenges and high-risk areas. The HEDS related material is identified below starting with the reference, relevant excerpt(s) or section(s), and related Annual Performance Goal.

**FY 2002 President's Budget: A Blueprint for New Beginnings – A Responsible Budget for America's Priorities**
Fulfilling the President's promise to make Government more market-based, NASA will pursue management reforms to promote innovation, open Government activities to competition, and improve the depth and quality of NASA's research and development (R&D) expertise. These reforms, described below, will help reduce NASA's operational burden and focus resources on Government-unique R&D at NASA.

International Space Station: NASA will undertake reforms and develop a plan to ensure that future International Space Station costs will remain within the President's 2002 Budget plan. Annual Performance Goal **3H15**

Space Shuttle Competitive Sourcing: NASA will aggressively pursue Space Shuttle competitive sourcing opportunities that improve the Shuttle's safety and operational efficiency. Annual Performance Goal **3H20**

**General Accounting Office (GAO): Major Management Challenges and Program Risks National Aeronautics and Space Administration (NASA), January 2001**
Controlling International Space Station Development and Support Costs: Annual Performance Goal **3H15**

**NASA Office of Inspector General (OIG): NASA's Top 10 Management Challenges, December 2000**
International Space Station – cost and planning. Annual Performance Goal **3H15**

**Comments related to GAO concerning changes in Annual Performance Goals (APGs):** In a previous meeting with GAO concerns were raised over changing the annual performance goals. Annual performance goals are set for a particular year to meet a strategic goal and strategic objective. Annual performance goals by their nature can change yearly. Strategic goals and strategic objectives do not change yearly but are locked in place for at least three years. These are the goals and objectives we track to show a trend not the APGs. The last change to the NASA Strategic Plan took place in October 2000 -- this accounts for the changes in strategic goals and strategic objectives from FY 2001 to FY 2002. The Performance Plan for FY 2002 is the first year under the new NASA Strategic Plan. At present HEDS has not changed its strategic goals or strategic objectives since the publication of the NASA Strategic Plan 2000.

## Verification and Validation

**Internal Assessment**
Interim evaluation and monitoring of performance targets will be conducted – as required – as an element of regular meetings of the Office of Space Flight and HEDS Management Boards.

Final data collection, reporting and verification for inclusion in NASA's Annual Performance Report will rely on several different processes depending on the particular Annual Performance Goal. Wherever possible, a specific tangible product has been identified in the indicator for individual performance goals to strengthen the validation process.

For many HEDS performance goals, (e. g. Space Shuttle in-flight anomalies, International Space Station assembly milestones) verification of performance is straightforward and progress is monitored through regular management channels and reports.

**External Assessment**
To assist in evaluating those performance goals that are more difficult to associate with specific tangible products, HEDS will employ an annual external assessment process. Past external assessors have included the: NASA Advisory Council, Space Flight Advisory Committee, General Accounting Office, NASA's Office of the Inspector General, and National Research Council.

The Space Flight Advisory Committee (an OSF Advisory Committee) reviews and evaluates OSF performance annual performance goals.

# FY 2003 MULTI-YEAR PERFORMANCE TREND

## Human Exploration and Development of Space

**Invest in the development of high-leverage technologies to enable safe, effective, and affordable human/robotic exploration.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Explore the Space Frontier | | 0H38: In coordination with other Enterprises, develop and implement tests and demonstrations of capabilities for future human exploration in the areas of advanced space power, advanced space transportation, information and automation systems, and sensors and instruments. | 1H32: Initiate the HEDS Technology/Commercialization program and establish a synergistic relationship with industry. |
| Assessment | | Yellow | TBD |

**Conduct engineering research on the International Space Station to enable exploration beyond Earth orbit.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Explore the Space Frontier | | | |
| Assessment | | | |

**Invest in the development of high-leverage technologies to enable safe, effective, and affordable human/robotic exploration.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Explore the Space Frontier | | 3H01: The HEDS Advanced Programs office work collaboratively with other NASA Enterprises and Field Centers on advanced planning activities and leverage available resources in advanced technologies that will enable safe, effective, and affordable human/robotic exploration. | |
| Assessment | | TBD | |

**Conduct engineering research on the International Space Station to enable exploration beyond Earth orbit.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Explore the Space Frontier | | 3H25: Space Shuttle supports exploration by transporting payloads, logistics, and crew to the ISS. | |
| Assessment | | | |

**Enable human exploration through collaborative robotic missions**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Explore the Space Frontier | | OH35: Complete the integration and testing of the Mars In-situ Propellant Production Precursor (MIP) flight unit for the 2001 Mars Surveyor mission. | 1H1: Complete testing and delivery for spacecraft integration of experiments for the Mars Surveyor Program 2001 missions. |
| Assessment | | Red | TBD |
| Explore the Space Frontier | | OH35: Complete the integration and testing of the Mars In-situ Propellant Production Precursor (MIP) flight unit for the 2001 Mars Surveyor mission. | 1H1: Complete testing and delivery for spacecraft integration of experiments for the Mars Surveyor Program 2001 missions. |
| Assessment | | Red | TBD |

**Provide and make use of safe, affordable and improved access to space.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 9H15: Achieve seven or fewer flight anomalies per mission | 0H12: Achieve seven or fewer flight anomalies per mission | 1H7: Achieve 8 or fewer flight anomalies per mission. |
| Assessment | Green | Green | TBD |

**Enable human exploration through collaborative robotic missions**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Explore the Space Frontier | | 3H04: Provide reliable space communication services for Space Science and Earth Science missions be consistent with program and project requirements. | |
| Assessment | | | |
| Explore the Space Frontier | 2H03: Provide reliable launch services for approved missions.<br>• NASA success rate at or above a running average of 95% for missions noted on the Flight Planning Board manifest and launched pursuant to commercial launch service contracts. | 3H03: Provide reliable launch services for approved missions.<br>• NASA success rate at or above a running average of 95% for missions noted on the Flight Planning Board manifest and launched pursuant to commercial launch service contracts. | |
| Assessment | TBD | TBD | |

**Provide and make use of safe, affordable and improved access to space.**

| | | | |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 2H06: Assure public, flight crew, and workforce safety for all Space Shuttle operations, measured by the following:<br>• Achieve zero type A or B mishaps in FY 2002.<br>• Achieve an average of 8 or fewer flight anomalies per Space Shuttle mission | 3H05: Assure public, flight crew, and workforce safety for all Space Shuttle operations, measured by the following:<br>• Achieve zero type A or B mishaps in FY 2003<br>• . Achieve an average of 8 or fewer flight anomalies per Space Shuttle mission | |
| Assessment | TBD | TBD | |

**Provide and make use of safe, affordable and improved access to space.**

| | **FY 1999** | **FY 2000** | **FY 2001** |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 9H16: Achieve 85% on time, successful launches, excluding weather risk. | 0H13: Achieve 85% on time, successful launches, excluding weather risk. Changed to: Achieve 100% on-orbit mission success. | 1H30: Achieve 100% on-orbit mission success |
| Assessment | Yellow | Green | TBD |
| Enable Humans to live and Work Permanently in Space | 9H17: Achieve a 13-month manifest preparation time. | 0H14: Achieve a 12- month manifest preparation time. | |
| Assessment | Green | Green | |
| Enable Humans to live and Work Permanently in Space | 9H18: Achieve a 60% increase in predicted reliability of Space Shuttle over 1995 | 0H15: Have in place an aggressive Shuttle program that ensures the availability of a safe and reliable Shuttle system through the ISS era. | 1H6: Expedite a safety improvement program to ensure the continued safe operations of the Space Shuttle that ensures the availability of a safe and reliable Shuttle system to support Space Station Assembly milestones and operations. |
| Assessment | Green | Red | TBD |

**Provide and make use of safe, affordable and improved access to space.**

| | **FY 2002** | **FY 2003** | **FY 2004** |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 2H07: Safely meet the FY 2002 manifest and flight rate commitment. Annual performance goal is measured for Space Shuttle performance only. | 3H06: Safely meet the FY 2003 manifest and flight rate commitment. Annual performance goal is measured for Space Shuttle performance only. | |
| Assessment | TBD | TBD | |
| Enable Humans to live and Work Permanently in Space | 2H08: Maintain a "12-month" manifest preparation time. | 3H07: Maintain a "12-month" manifest preparation time. | |
| Assessment | TBD | TBD | |
| Enable Humans to live and Work Permanently in Space | 2H09: Have in place a Shuttle safety investment program that ensures the availability of a safe and reliable Shuttle system for ISS assembly and operations. | 3H08: Have in place a Shuttle safety investment program that ensures the availability of a safe and reliable Shuttle system for ISS assembly and operations. | |
| Assessment | TBD | TBD | |

**Provide and make use of safe, affordable and improved access to space.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |

**Provide and make use of safe, affordable and improved access to space.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | 3H09: HEDS will collaborate with NASA's Office of Human Resources and Education, and Second Generation Program Office to establish and implement an agency wide training program for employees that support the Space Launch Initiative needs. The training program will communicate and document lessons learned from other major technology development and operational programs. Lessons learned would be based on but not limited to both government and contractor experience on the Space Shuttle program, Saturn program, and other commercial launch vehicle programs. | |
| Assessment | | TBD | |
| Enable Humans to live and Work Permanently in Space | | 3H10: HEDS Enterprise will work with the Second Generation Program to define available opportunities to utilize Office of Space Flight assets to test 2nd Generation Reusable Launch Vehicle enabling technologies. | |
| Assessment | | TBD | |

**Operate the International Space Station to advance science, exploration, engineering and commerce.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | 0H61: Conduct operations with a three-person human presence on the ISS. | 1H12: Successfully complete the majority of combined ISS planned operations schedules and milestones as represented by permanent human on-orbit operations. |
| Assessment | | Yellow | TBD |
| Enable Humans to live and Work Permanently in Space | 9H42: Initiate full-scale Multi-Element Integration Testing (MEIT) for elements in the first four launch. | | 1H10: Successfully complete the majority of the planned development schedules and milestones required to support the Multi-element Integration Testing. |
| Assessment | Green | | TBD |
| Enable Humans to live and Work Permanently in Space | 9H44: Conduct physical integration of the Z1 Truss launch package and initiate MEIT. | | |
| Assessment | Green | | |
| Enable Humans to live and Work Permanently in Space | 9H43: Deliver the U.S. laboratory module to the launch site in preparation for MEIT. | 0H16: Deploy and activate the U.S. Laboratory Module to provide a permanent on orbit laboratory capability. | |
| Assessment | Green | Yellow | |
| Enable Humans to live and Work Permanently in Space | 9H19: Deploy and activate the Russian-built Functional Cargo Block as the early propulsion and control module. | 0H18: Deploy and activate the Airlock to provide an ISS-based EVA capability. | 1H11: Successfully complete the majority of the ISS planned on-orbit activities such as delivery of mass to orbit and enhanced functionality. |
| Assessment | Green | Yellow | TBD |

**Operate the International Space Station to advance science, exploration, engineering and commerce.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 2H10: Demonstrate ISS on-orbit vehicle operational safety, reliability, and performance. | 3H11: Demonstrate ISS on-orbit vehicle operational safety, reliability, and performance. | |
| Assessment | TBD | TBD | |
| Enable Humans to live and Work Permanently in Space | 2H11: Demonstrate ISS program progress and readiness at a level sufficient to show adequate readiness in the assembly schedule. | 3H12: Demonstrate and document the ISS program progress and readiness at a level sufficient to show adequate support of the assembly schedule. | |
| Assessment | TBD | TBD | |
| Enable Humans to live and Work Permanently in Space | | | |
| | | | |
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |
| Enable Humans to live and Work Permanently in Space | 2H12: Successfully complete 90% of the ISS planned mission objectives. | 3H13: Successfully complete 90% of the ISS planned mission objectives. | |
| Assessment | TBD | TBD | |

**Operate the International Space Station to advance science, exploration, engineering and commerce.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 9H41: Deploy and activate the first U.S.-built element, Unity (Node 1), to provide docking locations and attach ports. | 0H17: Deploy and activate the Canadian-built Space Station Remote Manipulator System to provide an ISS-based remote manipulating capability for maintenance and assembly. | |
| Assessment | Green | Yellow | |
| Enable Humans to live and Work Permanently in Space | | 0H19: Deliver to orbit the first of three Italian-build Multi-Purpose Logistic Modules to provide a reusable capability for delivering payload and systems racks to orbit. | |
| Assessment | | Yellow | |
| Enable Humans to live and Work Permanently in Space | | 0H20: Complete preparations for the initial ISS research capability through the integration of the first rack of the Human Research Facility (HRS-1), five EXPRESS racks with small payload research and the Microgravity Science Glovebox (MSG). | 1H13: Successfully complete the majority of the planned research activities in support of initiation of on-orbit research opportunities |
| Assessment | | Yellow | TBD |
| Enable Humans to live and Work Permanently in Space | | | 1H14: Successfully complete no less than 85% of the planned Russian Program Assurance schedules and milestones required for the development of the Propulsion Module. |
| Assessment | | | TBD |

**Operate the International Space Station to advance science, exploration, engineering and commerce.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |

**Operate the International Space Station to advance science, exploration, engineering and commerce.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | 0H22: Complete the production of the X-38 first space flight test article in preparation for a Shuttle test flight in 2001. | 1H15: Successfully complete no less than 75% of the planned crew return capability schedules. FY01 indicators will include accomplishment of program schedule milestones for Phase 1 development of a Crew Return Vehicle (CRV) that could provide the U.S. crew return capability. |
| Assessment | | Yellow | TBD |

**Meet sustained space operations needs while reducing costs.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 9H30: Complete the development of a commercialization plan for the ISS and the Space Shuttle in partnership with the research and commercial communities, and define and recommend policy and legislative changes. | 0H39: Promote privatization of Space Shuttle operations and reduce civil service resource requirements for operations by 20% (from the FY 1996 FTE levels) in FY 2000. | |
| | Yellow | Red | |
| Enable Humans to live and Work Permanently in Space | 9H34: Develop options and recommendations to commercialize space communications. | 0H42: Increase the expenditures for commercial services to 10% of the total space communications budget by FY 2000. | 1H20: Increase the percentage of the space operations budget allocated to acquisition of communications and data services from the commercial sector to 15%. |
| Assessment | Red | Green | TBD |

**Operate the International Space Station to advance science, exploration, engineering and commerce.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |

**Meet sustained space operations needs while reducing costs.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | 3H14: Space Communications performance metrics for each Space Shuttle and ISS mission/expedition will be consistent with detailed program and project operations requirements in project Service Level Agreements. | |
| | | | |
| Enable Humans to live and Work Permanently in Space | 2H15: The Space Communications program will conduct tasks that enable commercialization and will minimize investment in government infrastructure for which commercial alternatives are being developed. | 3H15: Develop and execute a management plan and open future Station hardware and service procurements to innovation and cost-saving ideas. | |
| Assessment | TBD | | |

**Meet sustained space operations needs while reducing costs.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | | 0H40: Promote privatization and commercialization of Space Shuttle payload operations through the transition of payload management functions (payload integration managers, payload officers, etc.) by FY 2000. | 1H21: Achieve at least 95 percent of planned data delivery from space flight missions as documented in space, ground, deep space, and NASA integrated service networks performance metrics consistent with detailed program and project operations requirements in project service level agreements. |
| Assessment | | Green | TBD |
| Enable Humans to live and Work Permanently in Space | | 0H41: Within policy limitations and appropriate waivers, pursue the commercial marketing of Space Shuttle payloads by working to allow the Space Flight Operations Contractor to target two reimbursable flights, one in FY 2001 and one in FY 2002. | |
| Assessment | | No longer applicable - see 2000 Performance Report | |
| Enable Humans to live and Work Permanently in Space | 9H33: Reduce space communications operations costs by 30 to 35% compared to the FY96 budget, through a consolidated space communications contract to meet established budget targets. | 0H43: Reduce the space communications budget submit for FY 2000 by 30-35% from the FY 1996 congressional budget submit. | |
| Assessment | Green | Green | |

**Meet sustained space operations needs while reducing costs.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable Humans to live and Work Permanently in Space | 2H16: Performance metrics for each mission will be consistent with detailed program and project operations requirements in project Service Level Agreements<br>• Achieve at least 95 percent of planned data delivery for space flight missions. | Captured by metric 3H14 | |
| Assessment | TBD | | |
| Enable Humans to live and Work Permanently in Space | 2H19: Develop and execute a management plan and open future Station hardware and service procurements to innovation and cost-saving ideas. | | |
| Assessment | | | |
| Enable Humans to live and Work Permanently in Space | | | |
| Assessment | | | |

**Improve the accessibility of space to meet the needs of commercial research and development.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable the Commercial Development of Space | | | |
| Assessment | | | |
| Enable the Commercial Development of Space | | | |
| Assessment | | | |
| Enable the Commercial Development of Space | | | |
| Assessment | | | |

**Foster commercial endeavors with the International Space Station and other assets.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable the Commercial Development of Space | | | |
| Assessment | | | |

**Improve the accessibility of space to meet the needs of commercial research and development.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable the Commercial Development of Space | | 3H16: The Space Communications program will conduct tasks that enable commercialization and will minimize investment in government infrastructure for which commercial alternatives are being developed. | |
| Assessment | | TBD | |
| Enable the Commercial Development of Space | 2H17: Provide an average of five mid-deck lockers on each Space Shuttle mission to the International Space Station for research. | 3H02: Provide for science and technology research on the ISS a minimum average of 5 mid-deck lockers for each Space Shuttle mission to the ISS and maintain 80% availability of Space Station resources to support science and technology research. | |
| Assessment | TBD | | |
| Enable the Commercial Development of Space | 2H18: Establish mechanisms to enable NASA access to the use of U.S. commercially developed launch systems. | 3H17: Establish mechanisms to enable NASA access to the use of U.S. commercially developed launch systems. | |
| Assessment | TBD | TBD | |

**Foster commercial endeavors with the International Space Station and other assets.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable the Commercial Development of Space | 2H26: Increase collaboration in space commerce with a variety of industry, academia and non-profit organizations. | 3H18: Establish mechanisms to enable NASA to utilize commercial payload processing facilities. | |
| Assessment | TBD | | |

**Foster commercial endeavors with the International Space Station and other assets.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable the Commercial Development of Space | | | |
| Assessment | | | |

**Develop new capabilities for human space flight and commercial applications through partnerships with the private sector**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Enable the Commercial Development of Space | | 0H44 Invest 25% of the space communications technology budget by FY 2000 in projects that could enable space commercial opportunities, including leveraging through a consortium of industry, academia, and Government. | |
| Assessment | | Green | |
| Enable the Commercial Development of Space | | | 1H23: Foster commercial endeavors by reviewing and/or implementing new policies and plans, such as the Space Station resource pricing policy and intellectual property rights policy. Ensure that Space Station resources allocated to commercial research are utilized by commercial partners to develop commercial products and improve industrial processes. |
| Assessment | | | TBD |

**Foster commercial endeavors with the International Space Station and other assets.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable the Commercial Development of Space | | 3H19: Increase collaboration in space commerce with a variety of industry, academia and non-profit organizations. | |
| Assessment | | | |

**Develop new capabilities for human space flight and commercial applications through partnerships with the private sector**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Enable the Commercial Development of Space | 2H21: Continue implementation of planned and new privatization efforts through the Space Shuttle prime contract and further efforts to safely and effectively transfer civil service positions and responsibilities to private industry. | 3H20: NASA will aggressively pursue Space Shuttle competitive sourcing opportunities that improve the Shuttle's safety and operational efficiency. | |
| Assessment | | | |
| Enable the Commercial Development of Space | 2H21: Continue implementation of planned and new privatization efforts through the Space Shuttle prime contract and further efforts to safely and effectively transfer civil service positions and responsibilities to private industry. | 3H20: NASA will aggressively pursue Space Shuttle competitive sourcing opportunities that improve the Shuttle's safety and operational efficiency. | |
| Assessment | | | |

**Engage and involve the public in the excitement and the benefits of—and in setting the goals for—the exploration and development of space.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Share the Experience and Benefits of discovery | | | |
| Assessment | | | |

**Provide significantly more value to significantly more people through exploration and space development efforts.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Share the Experience and Benefits of discovery | | | |
| Assessment | | | |

**Engage and involve the public in the excitement and the benefits of—and in setting the goals for—the exploration and development of space.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Share the Experience and Benefits of discovery | | 3H21: Conduct HEDS related Education and Outreach Programs to improve the engagement/involvement of the formal education, informal education, and the general public communities. | |
| Assessment | | TBD | |

**Provide significantly more value to significantly more people through exploration and space development efforts.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Share the Experience and Benefits of discovery | 2H24: Expand public access to HEDS missions information (especially ISS) by working with industry to create media projects and public engagement initiatives that allow "first-hand" public participation using telepresence for current missions, and virtual reality or mock-ups for future missions beyond Earth orbit. | 3H22: Expand public access to HEDS missions information (especially ISS) by working with industry, academia, and the media to create media projects and public engagement initiatives that allow "first-hand" public participation using telepresence for current missions, and virtual reality or mock-ups for future missions beyond Earth orbit. | |
| Assessment | TBD | TBD | |

**Advance the scientific, technological, and academic achievement of the Nation by sharing our knowledge, capabilities, and assets.**

| | FY 1999 | FY 2000 | FY 2001 |
|---|---|---|---|
| Share the Experience and Benefits of discovery | | | |
| Assessment | | | |
| Share the Experience and Benefits of discovery | | | |
| Assessment | | | |

**Advance the scientific, technological, and academic achievement of the Nation by sharing our knowledge, capabilities, and assets.**

| | FY 2002 | FY 2003 | FY 2004 |
|---|---|---|---|
| Share the Experience and Benefits of discovery | 2H28: Initiate the development and implementation of a formal and systematic mechanism to integrate HEDS latest research knowledge into the K-12 and University classroom environment. | 3H23: Initiate the development and implementation of a formal and systematic mechanism to integrate HEDS latest research knowledge into the K-12 / University classroom environment. | |
| Assessment | | TBD | |
| Share the Experience and Benefits of discovery | | 3H24: Engage collaborate with research universities (1) for joint generation of new knowledge in HEDS related areas, (2) for the advancement of the HEDS mission and development of cutting edge technical capabilities, and (3) for ensuring a high quality future workforce. | |
| Assessment | | TBD | |

| **Human Exploration and Development of Space FY 2003 Annual Performance Goals** | **Budget Category** | Access to Space (ELV's and Payloads) | Advanced Programs | External Affairs | International Space Station | Office of the Chief Engineer | Space Communications (Space Operations) | Space Shuttle |
|---|---|---|---|---|---|---|---|---|
| **Annual Performance Goal** | | | | | | | | |
| 3H01: The HEDS Advanced Programs office work collaboratively with other NASA Enterprises and Field Centers on advanced planning activities and leverage available resources in advanced technologies that will enable safe, effective, and affordable human/robotic exploration. | | | X | | | | | |
| 3H02: Provide for science and technology research on the International Space Station a minimum average of five mid-deck lockers for each Space Shuttle mission to the ISS and maintain 80% availability of Space Station resources to support science and technology research. | | | | | X | | | |
| 3H03: Provide reliable launch services for approved missions. | | X | | | | | | X |
| 3H04: Provide reliable space communication services for Space Science and Earth Science missions consistent with program and project requirements. | | | | | | | X | |
| 3H05: Assure public, flight crew, and workforce safety for all Space Shuttle operations. | | | | | | | | X |
| 3H06: Safely meet the FY 2003 manifest and flight rate commitment. Annual performance goal is measured for Space Shuttle performance only. | | | | | | | | X |
| 3H07: Maintain a “12-month” manifest preparation time. | | X | | | | | | X |

| **Human Exploration and Development of Space FY 2003 Annual Performance Goals** | **Budget Category** | Access to Space (ELV's and Payloads) | Advanced Programs | External Affairs | International Space Station | Office of the Chief Engineer | Space Communications (Space Operations) | Space Shuttle |
|---|---|---|---|---|---|---|---|---|
| **Annual Performance Goal** | | | | | | | | |
| 3H08: Have in place a Shuttle safety investment program that ensures the availability of a safe and reliable Shuttle system for International Space Station assembly and operations. | | | | | | | | X |
| 3H09: HEDS will collaborate with NASA's Office of Human Resources and Education, and Second Generation Program Office to establish and implement an agency wide training program for employees that support the Space Launch Initiative needs. The training program will communicate and document "lessons learned" from other major technology development and operational programs. "Lessons learned" would be based on but not limited to both government and contractor experience on the Space Shuttle program, Saturn program, and other commercial launch vehicle programs. | | | | | X | X | | |
| 3H10: HEDS Enterprise will work with the Second Generation Program to define available opportunities to utilize Office of Space Flight assets to test 2nd Generation Reusable Launch Vehicle enabling technologies. | | | | | | X | | X |
| 3H11: Demonstrate International Space Station on-orbit vehicle operational safety, reliability, and performance. | | | | | X | | | |

| **Human Exploration and Development of Space FY 2003 Annual Performance Goals** | **Budget Category** | Access to Space (ELV's and Payloads) | Advanced Programs | External Affairs | International Space Station | Office of the Chief Engineer | Space Communications (Space Operations) | Space Shuttle |
|---|---|---|---|---|---|---|---|---|
| **Annual Performance Goal** | | | | | | | | |
| 3H12: Demonstrate and document the International Space Station program progress and readiness at a level sufficient to show adequate support of the assembly schedule. | | | | | X | | | |
| 3H13: Successfully complete 90% of International Space Station planned mission objectives. | | | | | X | | | |
| 3H14: Space Communications performance metrics for each Space Shuttle and International Space Station mission/expedition will be consistent with detailed program and project operations requirements in project Service Level Agreements. | | | | | | | X | |
| 3H15: Develop and execute a management plan and open future Station hardware and service procurements to innovation and cost- saving ideas. | | | | | X | | | |
| 3H16: The Space Communications program will conduct tasks that enable commercialization and will minimize investment in government infrastructure for which commercial alternatives are being developed. | | | | | | | X | |
| 3H17: Establish mechanisms to enable NASA access to the use of U.S. commercially developed launch systems. | | X | | | | | | |
| 3H18: Establish mechanisms to enable NASA to utilize commercial payload processing facilities. | | X | | | | | | |

| **Human Exploration and Development of Space FY 2003 Annual Performance Goals** | **Budget Category** | Access to Space (ELV's and Payloads) | Advanced Programs | External Affairs | International Space Station | Office of the Chief Engineer | Space Communications (Space Operations) | Space Shuttle |
|---|---|---|---|---|---|---|---|---|
| **Annual Performance Goal** | | | | | | | | |
| 3H19 - Increase collaboration in space commerce with a variety of industry, academia and non-profit organizations. | | | | X | | | | |
| 3H20: NASA will aggressively pursue Space Shuttle competitive sourcing opportunities that improve the Shuttle's safety and operational efficiency. | | | | | | | | X |
| 3H21: Conduct HEDS related Education and Outreach Programs to improve the engagement/involvement of the formal education, informal education, and the general public communities. | | | | X | | | | |
| 3H22: Expand public access to HEDS missions information (especially International Space Station) by working with industry, academia, and the media to create media projects and public engagement initiatives that allow "first-hand" public participation using telepresence for current missions, and virtual reality or mock-ups for future missions beyond Earth orbit. | | | | X | | | | |
| 3H23: Initiate the development and implementation of a formal and systematic mechanism to integrate HEDS latest research knowledge into the K-12/University classroom environment. | | | | X | | | | |

| **Human Exploration and Development of Space FY 2003 Annual Performance Goals** | **Budget Category** | Access to Space (ELV's and Payloads) | Advanced Programs | External Affairs | International Space Station | Office of the Chief Engineer | Space Communications (Space Operations) | Space Shuttle |
|---|---|---|---|---|---|---|---|---|
| **Annual Performance Goal** | | | | | | | | |
| 3H24: Engage and collaborate with research universities (1) for joint generation of new knowledge in HEDS related areas, (2) for the advancement of the HEDS mission and development of cutting edge technical capabilities, and (3) for ensuring a high quality future workforce. | | | | X | | | | |
| 3H25: Space Shuttle supports exploration by transporting payloads, logistics, and crew to the International Space Station. | | | | | | | | X |